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AMSAT News Service

ANS-082
March 23, 2025

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The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, the Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: ans-editor [at] amsat.org <http://amsat.org>

Sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
https://mailman.amsat.org/postorius/lists/ans.amsat.org/
January/February 2025 Issue of *The AMSAT Journal* is Now Available

The January/February 2025 issue of *The AMSAT Journal* is now available to members on AMSAT’s Member Portal.

The AMSAT Journal is a bi-monthly digital magazine for amateur radio in space enthusiasts, published by the Radio Amateur Satellite Corporation (AMSAT). Each issue is your source for hardware and software projects, technical tips, STEM initiatives, operational activities, and news from around the world.

Inside the Current Issue:

- Apogee View – Robert Bankston, KE4AL
- Engineering Update – AMSAT News Service
- Mitigating and Monitory Space Traffic and Debris – Joe Kornowski, KB6IGK
- Transceivers for Satellite Operation – Keith Baker, KB1SF/VA3KSF
- New England Sci-Tech Updates AMSAT TLE Bulletins – RJ Fitzgerald, N1BGA, et al.
- Determination of Spacecraft Orbital Elements from In-flight GNSS Measurements – Joseph DiVerdi, Ph.D., MBA, K0NMR
- SpaceX Launches Hamsats on Rideshare Mission – AMSAT News Service

AMSAT members may access the issue, and a library of back issues, by

logging into their member account at https://launch.amsat.org/Sys/Login. Non-members may join AMSAT at https://launch.amsat.org/Membership in order to access *The AMSAT Journal* and to receive a variety of other member benefits.

[ANS thanks AMSAT for the above information]

The 2025 AMSAT President’s Club Coins Have Just Arrived!
Celebrating the 40th Anniversary of Amateur Radio on Human Spaceflight
Help Support GOLF and Fox Plus.

[image: 2025 PC Coin Set]

Join the AMSAT President’s Club today and help
Keep Amateur Radio in Space!
*https://www.amsat.org/join-the-amsat-presidents-club/
<https://www.amsat.org/join-the-amsat-presidents-club/>*

Fram2Ham SSTV Transmissions Planned

Astronaut and radio amateur, Rabea Rogge LB9NJ / KD3AID, will be transmitting amateur radio Slow Scan TV images from space during the SpaceX Fram2 mission, planned for launch on March 31.

The Fram2 mission is set to become the first human space flight in polar orbit – flying over the North and South poles. Named after the famous polar exploration ship Fram, which completed voyages to both the Arctic and Antarctica. The SpaceX Falcon 9 rocket will launch four astronauts from Europe and Australia into orbit for 3-5 days.

Rabea Rogge LB9NJ / KD3AID [Photo credit: DLR]

During the Fram2 mission Rabea Rogge, LB9NJ (Norway) and KD3AID (USA), will be operating the onboard amateur (ham) radio system sending SSTV images as part of a high school and university student competition. These SSTV images will also be available to be received by the general public during the mission.

The International Space Station simulated the Fram2 SSTV mode PD-120 transmissions from February 13-17 on 437.550 MHz FM to enable people to gain proficiency in receiving the signals before the mission.

Fram2Ham is an experimental radio competition open to high school and university ages. Rogge will send pictures of three geographical locations via an onboard ham radio, but here’s the twist: they’ll be cut into pieces and mixed up! Participants will receive only fragments of the locations and need to guess where on Earth they are and what their role in polar history was. While anyone can receive the pictures, forming an international team may help you solve the puzzle!

There are several challenges like low transmit power, variations of antenna orientation, and a short, 3-day mission duration, with only a limited time assigned for the SSTV operation. These challenges require operating proficiency and the use of the best attainable radio station and this simulation shall give the possibility to exercise this.

For more information on the Fram2 mission and for youth organizations interested in participating in the Fram2Ham SSTV competition, see https://fram2ham.com/

First human Spaceflight to Earth’s polar regions https://f2.com/

Fram2Ham on Discord https://discord.com/invite/GYQzmSh5sp

Competition details
https://fram2ham.com/wp-content/uploads/2025/02/amapay_user_manual-ver-2-7-2025.pdf

[ANS thanks AMSAT-UK and FRAM2 Ham for the above information]

Need new satellite antennas?

Purchase M2 LEO-Packs from the AMSAT Store.
When you purchase through AMSAT, a portion of the proceeds goes towards
Keeping Amateur Radio in Space.
https://amsat.org/product-category/hardware/
<https://amsat.org/product-category/hardware/>

Alba Orbital Assists AMSAT-EA With HADES-ICM Project

Alba Orbital (UK, USA, Germany) is the world's leading PocketQube company that has delivered 53 pico-satellites on-orbit to date. These include five PocketQube satellites from three different countries recently flown on-board SpaceX's Transporter-13 Rideshare mission.

Alba Orbital's AlbaPod [Photo: Alba Orbital]

The satellites were integrated into Alba Orbital's PocketQube Deployer, AlbaPod, at their new facilities in Hillington Industrial Estate, Glasgow, the world's first PocketQube factory. After integration, the cluster of pocket-sized satellites were shipped out to SpaceX and then hitched their ride to LEO.

PocketQubes are highly miniaturized satellites, typically 5 cm cubed per unit ('P'), that can be launched to orbit for as little as 25K euros via Alba Orbital's rideshare services. PocketQubes are cost-effective, quicker to build, and provide versatile options for a variety of missions that range from educational projects to advanced technological demonstrations.

Payloads aboard this mission include HADES-ICM – HYDRA SPACE / IC MERCURY / SMART IR [Photo: Alba Orbital]

HADES-ICM, a 1.5p PocketQube, this smallsat is carrying an open voice transponder for the radio amateur community. It will be operated by the non-proft organization AMSAT-EA. The PocketQube includes the UK based Smart IR's technology experiment that will be conducted on-orbit as well as an icMercury experiment. Inspiring space sustainability text messages that will be broadcasted periodically by HADES-ICM.

[ANS thanks Alba Orbital for the above information]

Firefly's Blue Ghost Lander Photographs Eclipse From The Moon

Firefly's Blue Ghost lunar lander snapped a gorgeous photo of a solar eclipse from the Moon in which Earth covers up most of the Sun, leaving only the so-called diamond ring effect.

[Photo: Firefly Aerospace]

The lander snapped the photo at around 05:30z on Friday March 14, as the Earth slowly blocked a view of the Sun. The solar eclipse on the Moon occurred at the same time as a total lunar eclipse here on Earth. Terrestrial viewers saw the lunar surface turn a red hue.

[Photo: Firefly Aerospace]

The eclipse lasted for around five hours at the lunar landing site in Mare Crisium. Firefly released another image from the earlier part of the eclipse that shows the lander's solar panel as the Sun starts to hide behind Earth's shadow.

Firefly's Blue Ghost lander was launched on January 15 and successfully touched down on the Moon on Sunday, March 2 at around 07:30z. It landed upright, with no issues, unlike the Intuitive Machines lander which toppled over on landing on March 6.

This is Firefly's first mission to the Moon, so Blue Ghost is packed with ten NASA instruments designed to probe the lunar surface and gather data to (hopefully) support upcoming human missions to the natural satellite. This is all part of NASA's Commercial Lunar Payload Services (CLPS) initiative.

Not long after sunset at the end of the lunar day on March 16, 2025, the Lander's batteries were depleted, communications were lost and the spacecraft's mission was officially declared ended at 23:25z.

[ANS thanks Engadget for the above information]

AMSAT Remove Before Flight Key Tags Now Available Yes, These are the Real Thing!

Your $20 Donation Goes to Help Fly a Fox-Plus Satellite Includes First Class Postage (Sorry – U.S. Addresses Only) Order Today at https://www.amsat.org/product/amsat-remove-before-flight-keychain <https://www.amsat.org/product/amsat-remove-before-flight-keychain>

Changes to AMSAT-NA TLE Distribution for March 21

Two Line Elements or TLEs, often referred to as Keplerian elements or keps in the amateur community, are the inputs to the SGP4 standard mathematical model of spacecraft orbits used by most amateur tracking programs. Weekly updates are completely adequate for most amateur satellites. TLE bulletin files are updated daily in the first hour of the UTC day. New bulletin files will be posted immediately after reliable elements become available for new amateur satellites. More information may be found at https://www.amsat.org/keplerian-elements-resources/.

NOTICE: In an effort to minimize confusion between sources of two line element sets, AMSAT is adopting the convention of listing the USSF/NORAD Satellite Catalog name first, followed by any secondary name or names in parentheses. For example, "POEM 4 (BGS ARPIT)" was added recently where "POEM 4" is the name that appears in the U.S. Space Force Satellite Catalog, and "BGS ARPIT" is the name best known within the amateur satellite community. Expect name changes for affected satellites in the coming weeks as this change is fully implemented.

This week there are no additions or deletions to the AMSAT TLE distribution.

[ANS thanks Joe Fitzgerald, KM1P, AMSAT Orbital Elements Manager for the above information]

ARISS NEWS

Amateurs and others around the world may listen in on contacts between amateurs operating in schools and allowing students to interact with astronauts and cosmonauts aboard the International Space Station. The downlink frequency on which to listen is 145.800 MHz worldwide.

Canadian Elementary School Maple Bear, Sofia, Bulgaria, direct via LZ1KRN
The ISS callsign is presently scheduled to be OR4ISS
The scheduled crewmember is Don Pettit, KD5MDT
The ARISS mentor is IN3GHZ
Contact is go for: Mon 2025-03-24 14:23:27 UTC 42 deg

Amur State University, Blagoveshchensk, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled crewmember is Aleksey Ovchinin
The ARISS mentor is RV3DR
Contact is go for Thu 2025-03-27 09:00 UTC

Yonezawa 5th Junior High School, Yonezawa, Japan, direct via 8N7Y5JH
The ISS callsign is presently scheduled to be OR4ISS
The scheduled crewmember is Don Pettit, KD5MDT
The ARISS mentor is 7M3TJZ
Contact is go for: Fri 2025-03-28 09:56:00 UTC 30 deg

Aznakaevsky district of the Republic of Tatarstan, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled crewmember is Ivan Vagner
The ARISS mentor is RV3DR
Contact is go for Fri 2025-03-28 12:50 UTC

City of St. Petersburg School, St. Petersburg, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled crewmember is Aleksey Ovchinin
The ARISS mentor is RV3DR
Contact is go for 2025-04-03 12:45 UTC

Ufa City School, Ufa, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled crewmember is Ivan Vagner
The ARISS mentor is RV3DR
Contact is go for 2025-04-04 10:25 UTC

Congratulations and welcome home to Sunita Williams, KD5PLB! She has done 92 events/78 contacts. She has the lead at the moment!

The crossband repeater continues to be ACTIVE (145.990 MHz up {PL 67} & 437.800 MHz down). If any crewmember is so inclined, all they have to do is pick up the microphone, raise the volume up, and talk on the crossband repeater. So give a listen, you just never know.

The packet system is also ACTIVE (145.825 MHz up & down).

Ham TV – (2395.00 MHz down) is currently STOWED.

As always, if there is an EVA, a docking, or an undocking; the ARISS radios are turned off as part of the safety protocol.

Note, all times are approximate. It is recommended that you do your own orbital prediction or start listening about 10 minutes before the listed time.

The latest information on the operation mode can be found at
https://www.ariss.org/current-status-of-iss-stations.html

The latest list of frequencies in use can be found at

https://www.ariss.org/contact-the-iss.html

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information]

Upcoming Satellite Operations

None listed at this time.

A growing number of satellite rovers are currently engaged in sharing their grid square activations on https://hams.at. By visiting the website, you gain easy access to comprehensive information about the operators responsible for activating specific grid squares. Additionally, you have the ability to assess the match score between yourself and a particular rover for a given pass, while also being able to identify the upcoming satellite passes that are accessible from your location.

[ANS thanks Ian Parsons, K5ZM, AMSAT rover page manager, for the above information]

AMSAT Ambassador Activities

AMSAT Ambassadors provide presentations, demonstrate communicating through amateur satellites, and host information tables at club meetings, hamfests, conventions, maker faires, and other events.

*AMSAT Ambassador Mitch Ahrenstorff, ADØHJ, speaks with an interested attendee at the Midwinter Madness Hamfest in Buffalo, Minn. on Saturday, March 22. Ambassadors Paul Overn, KEØPBR, and Mark Johns, KØJM, **were also kept busy at the table during the event**. [Photo: KØJM]*

March 27, 2025
AMSAT Update and Info
West Fork Amateur Radio Club
Paradise Fire Dept.
303 Main St.
Paradise, TX 76073
https://wfarc.org/
W5ITR

April 4 – 5, 2025
Southeastern VHF Conference 2025
Quality Inn
3095 Wilma Rudolph Blvd
Clarksville, TN 37040
W4FCL

April 5, 2025
RARSfest
Jim Graham Building
NC State Fairgrounds
Youth Center Drive, Gate 5
Raleigh NC
https://www.rarsfest.org/index.php
K4EB, N4AEW, W1DCM, KK4HG, N4HF

May 16-18, 2025
Dayton Hamvention
Greene County Fair and Expo Center
210 Fairground Road, Xenia, OH
https://hamvention.org/

[ANS thanks Bo Lowrey, W4FCL, Director – AMSAT Ambassador Program, for the above information]

Satellite Shorts From All Over

+ The four members of the Crew-9 mission – Nick Hague, KG5TMV; Sunita Williams, KD5PLB; Barry “Butch” Wilmore; and Roscosmos cosmonaut Aleksandr Gorbunov – splashed down in the Gulf near Tallahassee, Florida shortly before 2200 UTC on Tuesday, March 18. Hague and Gorbunov launched to the ISS onboard the Dragon Freedom spacecraft in September 2024 and returned to Earth after logging 171 total days in space. Their colleagues, Williams and Wilmore, returned to Earth with 286 days in space after originally arriving at the space station onboard the Boeing CST-100 Starliner spacecraft launched on June 5, 2024. Prior to the departure of Starliner, two extra seats were created inside Dragon Endeavour (which brought up Crew-8) so that in the case of an emergency, Williams and Wilmore would have a way to return home. Thus, they were never actually “stranded” in space, as some media have reported. (ANS thanks SpaceFlight Now for the above information.)

+ The National Reconnaissance Office (NRO) annual conference will be held October 21-23, 2025. NRO brings together the best in academia and the private sector to keep America at the forefront of space-based intelligence, surveillance, and reconnaissance technology. NRO is soliciting abstracts for paper presentations at the conference. Previous topics included: Quantum Technologies, Artificial Intelligence, Advanced Manufacturing, Remote Sensing, Microelectronics, RF Technologies, Space Situational Awareness, & Other Enabling Technologies. Abstract deadline is April 18, 2025. See https://www.nro.gov/SRL/ for details. (ANS thanks David Vine, WA1EAW, for the above information.)

+ Researchers have broken a distance record in quantum communication by sending a secret encryption key nearly 13,000 km from China to South Africa, using a cheap, lightweight ‘microsatellite’. The satellite was able to send pulses of laser light, put into special quantum states, from a rooftop in Beijing to another at Stellenbosch University near Cape Town. The pulses formed a quantum key that was used to encrypt two images – one of China’s Great Wall and one showing part of Stellenbosch’s campus. The feat, a kind of encryption known as quantum key distribution (QKD), is a step towards being able to send ultra-secure messages between any two locations, however distant. (ANS thanks Nature.com for the above information.)

+ The increasing threat from space debris calls for both higher maneuverability in orbit and a reduction of the amount of junk. British startup Magdrive claims it can help with both, via a new propulsion system for spacecraft that will launch into space for the first time later this year and will be fueled by solid metal. The first incarnation of the Magdrive system – called Warlock – is set to launch into orbit in June 2025. It works by creating power using onboard solar panels to ionize metal. Once detonated, the metal is turned into extremely hot and dense plasma, or electrically charged gas. For now, the system is not refuelable. In the more distant future, however, the system could obtain its fuel from existing space junk, by harvesting dead satellites for metal to use as propellant. (ANS thanks CNN Science for the above information.)

+ In the next few months, from its perch atop a mountain in Chile, the Vera C. Rubin Observatory will begin surveying the cosmos with the largest camera ever built. But the rising number of satellites in orbit can be a problem for scientists because the satellites interfere with ground-based astronomical observations, by creating bright streaks on images and electromagnetic interference with radio telescopes. Until recently, astronomers had no centralized reference for tracking satellites. Now, the International Astronomical Union (IAU) has a virtual Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference (CPS), which serves as an information hub. One of the centre’s tools, called SatChecker, draws on a public database of satellite orbits,

fed by information from observers and companies that track objects in space. Astronomers can use SatChecker to confirm what satellite is passing overhead during their observations. (ANS thanks Nature.com for the above information.)

Join AMSAT today at https://launch.amsat.org/

In addition to regular membership, AMSAT offers membership to:

* Societies (a recognized group, clubs or organization).
* Primary and secondary school students are eligible for membership at one-half the standard yearly rate.
* Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status.
* Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week’s ANS Editor, Mark Johns, KØJM
mjohns [at] amsat.org

ANS is a service of AMSAT, the Radio Amateur Satellite Corporation, 712 H Street NE, Suite 1653, Washington, DC 20002